

PCT

From the INTERNATIONAL SEARCHING AUTHORITY

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Bushey, Hertfordshire WD23 1EE  
UNITED KINGDOM

RECEIVED

21 JUN 2004

A. MESSULAM & CO. LTD

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)

|  |  |
|--|--|
| Date of mailing<br>(day/month/year) 17/06/2004   |  |
| Applicant's or agent's file reference<br>P7189   | FOR FURTHER ACTION See paragraphs 1 and 4 below          |
| International application No.<br>PCT/IB 03/05817 | International filing date<br>(day/month/year) 10/12/2003 |
| Applicant<br><br>FORD GLOBAL TECHNOLOGIES, LLC   |  |

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.


☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

|  |   |
|--|---|
| Name and mailing address of the International Searching Authority<br> European Patent Office, P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Authorized officer<br><br>Bernd Stephan |
|--|---|

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|   |   |  |
|---|---|--|
| Applicant's or agent's file reference<br><b>P7189</b>   | <b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |  |
| International application No.<br><b>PCT/IB 03/05817</b> | International filing date (day/month/year)<br><b>10/12/2003</b>   | (Earliest) Priority Date (day/month/year)<br><b>04/01/2003</b> |
| Applicant<br><b>FORD GLOBAL TECHNOLOGIES, LLC</b>       |   |  |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B60K6/04 F02D35/00 F02D41/22 F02M21/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B60K F02B F02D F02M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.             |
|------------|--|-----------------------------------|
| Y          | WO 02/078987 A (PAICE CORP)<br>10 October 2002 (2002-10-10)<br><br>page 79, line 7 - line 10<br>figure 11                                      | 1-3,<br>6-13,<br>15-24,<br>28, 29 |
| Y          | US 2002/098414 A1 (OVSHINSKY STANFORD R<br>ET AL) 25 July 2002 (2002-07-25)<br>cited in the application<br><br>page 1, paragraph 2<br>figure 4 | 1-3,<br>6-13,<br>15-24,<br>28, 29 |
| A          | EP 0 420 599 A (CANADIAN GAS ASS)<br>3 April 1991 (1991-04-03)<br>the whole document<br><br>-/-  | 30, 31                            |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&amp;\* document member of the same patent family

Date of the actual completion of the international search

9 June 2004

Date of mailing of the international search report

18. 6. 04

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3018

Authorized officer

Wisnicki, M

## INTERNATIONAL SEARCH REPORT

ern Application No  
PCT/IB 03/05817

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |   |                       |
|--|---|-----------------------|
| Category *   | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
| A  | US 4 332 219 A (GONZALEZ ERNESTO)<br>1 June 1982 (1982-06-01)<br>the whole document | 32-35                 |

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB 03/05817

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

**1. Claims: 1-29**

Powertrain, vehicle with and method of using said powertrain

**2. Claims: 30,31**

Method for changing the fuel delivery rate for a combustion engine

**3. Claims: 32-35**

Method for sensing and responding to a backfire arising in the intake system of an engine

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Application No  
PCT/03/05817

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s)   | Publication<br>date  |
|---|----|---------------------|--|--|
| WO 02078987                               | A  | 10-10-2002          | US 2001039230 A1<br>WO 02078987 A2<br>US 2003217876 A1   | 08-11-2001<br>10-10-2002<br>27-11-2003   |
| US 2002098414                             | A1 | 25-07-2002          | US 6330925 B1<br>US 5856047 A<br>US 5851698 A<br>WO 03026907 A2<br>US 2003056510 A1<br>US 2003157045 A1<br>AU 746884 B2<br>AU 1465899 A<br>CA 2281537 A1<br>EP 0954454 A1<br>TW 494072 B<br>US 2002121396 A1<br>WO 9926802 A1<br>US 2003188901 A1<br>AU 732359 B2<br>AU 6140698 A<br>BR 9806807 A<br>CA 2277303 A1<br>DE 69822455 D1<br>EP 0976168 A1<br>JP 2002511977 T<br>WO 9834288 A1<br>AU 730028 B2<br>AU 6649998 A<br>BR 9807047 A<br>CA 2279203 A1<br>DE 69817791 D1<br>EP 0972314 A1<br>JP 2001509949 T<br>RU 2214024 C2<br>WO 9834292 A1 | 18-12-2001<br>05-01-1999<br>22-12-1998<br>03-04-2003<br>27-03-2003<br>21-08-2003<br>02-05-2002<br>15-06-1999<br>03-06-1999<br>10-11-1999<br>11-07-2002<br>05-09-2002<br>03-06-1999<br>09-10-2003<br>26-04-2001<br>25-08-1998<br>09-05-2000<br>06-08-1998<br>22-04-2004<br>02-02-2000<br>16-04-2002<br>06-08-1998<br>22-02-2001<br>25-08-1998<br>28-03-2000<br>06-08-1998<br>09-10-2003<br>19-01-2000<br>24-07-2001<br>10-10-2003<br>06-08-1998 |
| EP 0420599                                | A  | 03-04-1991          | CA 1326794 C<br>AT 124112 T<br>AU 649902 B2<br>AU 3014492 A<br>AU 630510 B2<br>AU 6327490 A<br>BR 9004900 A<br>CN 1052720 A ,B<br>DE 69020283 D1<br>DE 69020283 T2<br>EP 0420599 A2<br>JP 2680176 B2<br>JP 3260483 A<br>KR 9506880 B1<br>NZ 235494 A<br>RU 2079163 C1<br>US 5150690 A  | 08-02-1994<br>15-07-1995<br>02-06-1994<br>18-03-1993<br>29-10-1992<br>11-04-1991<br>10-09-1991<br>03-07-1991<br>27-07-1995<br>26-10-1995<br>03-04-1991<br>19-11-1997<br>20-11-1991<br>23-06-1995<br>23-12-1992<br>10-05-1997<br>29-09-1992   |
| US 4332219                                | A  | 01-06-1982          | US 4450060 A   | 22-05-1984   |

## INTERNATIONAL SEARCH REPORT

ema application No.

PCT/IB 03/05817

## Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A hydrogen-powered hybrid powertrain system (100,200,300,500,1000) includes a hydrogen-fuelled internal combustion engine (114,202,302,400,902) operating at a lean air/fuel mixture, and a supercharger (436) for boosting a primary drive torque produced by the engine primarily over a high operating speed range. An electric motor/generator (232,314,905) generates a secondary drive torque for the vehicle, such that the secondary drive torque complements the boosted primary drive torque over at least a low operating speed range of the powertrain. A disconnect clutch (312,510) disposed between the engine and the motor/generator engages and disengages the engine from the motor/generator, and serves to transfer the boosted primary driver torque through the motor/generator and to a power transmission system (116,316,550). The input at the power transmission is thus a combination of the boosted primary drive torque and the secondary drive torque having an enhanced torque characteristic over at least the low operating speed range.